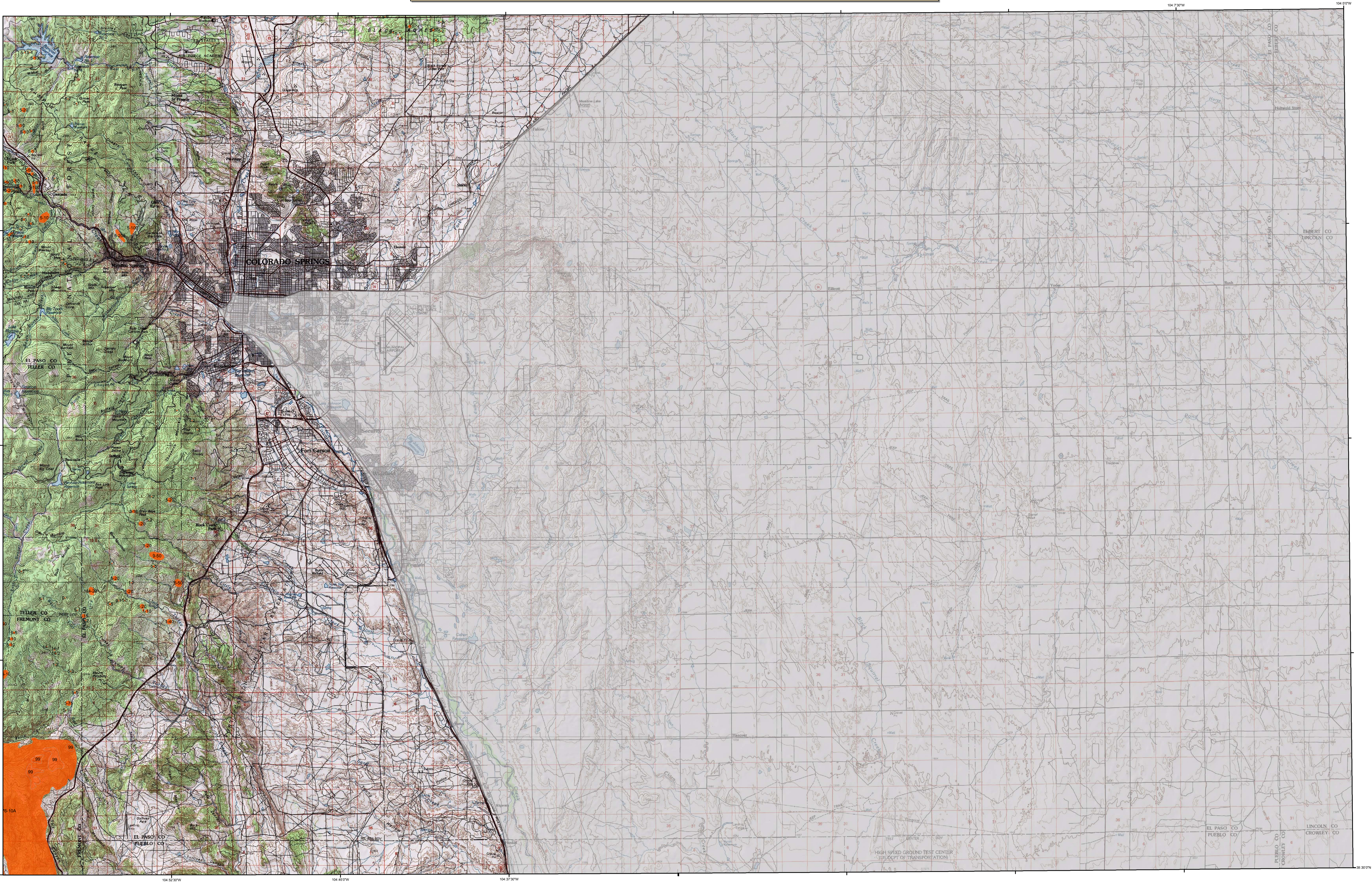


2006 Aerial Insect and Disease Survey

Colorado Springs, Colorado

USGS 100K TOPO!: 38104-E1



1:100,000

Legend

Causal Agent(s) Not Flown in 2006

Use of the Number System

Example: 5-25 = The first number before the dash is the causal agent code. The number after the dash is the number of dead "fader" trees in the polygon or point. When recent dead trees are not counted, an intensity code of L-light, M-moderate, and H-high may be used after the causal agent code. Periodically, trees per acreage estimates are used after the causal agent code instead of number of dead "fader" trees (or an intensity code). For example: 5-120 = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "fader" trees in the polygon per acre. In this case it would be an estimation that, on the average, one tree per every two acres would be a dead "fader" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "fader" trees. A / is used as a separator when a point polygon has more than one causal agent code.

Code Causal Agent	Primary Host	Code Causal Agent	Primary Host	Code Causal Agent	Primary Host
1 Douglas-fir beetle	Douglas-fir	50 White pine blister rust	Lodgepole Pine	109 for-tourmal fluging	Cottonwood/Poplar
2 Engelmann Spruce Beetle	Engelmann Spruce	51 Dwarf mistletoe	Softwoods	108 root rot	Cottonwood/Poplar
3 Mountain pine beetle	Ponderosa Pine	52 Elysiomyces	Ponderosa Pine	100 pine/wood nematode	Softwoods
4 Mountain pine beetle	Lodgepole Pine	53 Includes #05, 06 & 08	All Tree Species	110 oak wilt	Oak
5 Western pine beetle	Ponderosa Pine	54 Air pollution	All Tree Species	111 foliage disease	All Tree Species
6 Fir Engraver	White Fir	55 Chemical damage	All Tree Species	112 spruce ips	White Spruce
10 Douglas-fir engraver beetle	Douglas-fir	56 Lophodermium pinastri	Softwoods	113 twined chestnut borer	Oak
11 Western balsam bark beetle	Subalpine Fir	57 Rhabdocline pseudotsugae	Douglas-fir	114 anthracnose like foliar disease	Bur Oak
12 Unidentified bark beetle	Softwoods	58 Lophodermium arcuta	Softwoods	115 Dieback	All Tree Species
13 Pine engraver	Lodgepole Pine	59 Lecanostoma axicola	Softwoods	116 Mortality	All Tree Species
14 Pine engraver	Ponderosa Pine	60 Lophodermium concolor	Softwoods	117 Discoloration	All Tree Species
15 Ponderosa pine needle miner	Lodgepole Pine	61 Corthosoma pin	Softwoods	118 Herbicide	All Tree Species
16 Lodgepole pine needle miner	Ponderosa Pine	62 Needle cast (Hypodermataceae)	Softwoods	119 Flagging	All Tree Species
17 Jack pine budworm	Jack Pine	63 Root Rot	All Tree Species	120 aspen tortrix	Quaking Aspen
18 Spruce budworm, light defol.	Douglas-fir	64 Unidentified disease	Softwoods	121 Marssonina blight	Quaking Aspen
19 Spruce budworm, medium defol.	Douglas-fir	65 Winter damage light	All Tree Species	200 Dieback (ash)	Ash
20 Spruce budworm, heavy defol.	Douglas-fir	66 Winter damage medium	All Tree Species	201 Dieback (cottonwood)	Cottonwood/Poplar
22 Douglas-fir tussock moth	Douglas-fir	67 Winter damage heavy	All Tree Species	202 Dieback (hardwood)	Hardwoods
23 Pine butterfly	Ponderosa Pine	68 Diplodia	Softwoods	204 Dieback (oak)	Oak
24 Pine looper	Ponderosa Pine	69 Prionus black stain	Common Pinyon	210 Mortality (old cottonwood)	Cottonwood/Poplar
25 Pine tortrix	Ponderosa Pine	70 Fire	All Tree Species	211 Mortality (eastern cedar)	Eastern Red Cedar
26 Tent caterpillars	Hardwoods	71 Pionus	Softwoods	212 Mortality (hardwood)	Hardwoods
28 Leaf beetles	Hardwoods	72 Windthrow	All Tree Species	213 Mortality (oak)	Oak
33 Oak leaf roller	Hardwoods	73 High water damage	All Tree Species	214 Mortality (spruce)	Spruce
34 Pine needle-shaft miner	Ponderosa Pine	74 Avalanche	All Tree Species	220 Discoloration (ash)	Ash
35 Pine sawfly	Ponderosa Pine	75 Aspen decline-multiple agents)	Quaking Aspen	221 Discoloration (conifer)	Softwoods
36 Pine tussock moth	Ponderosa Pine	76 Prionus pine mortality	Common Pinyon	222 Discoloration (cottonwood)	Cottonwood/Poplar
37 Barkworms	Hardwoods	77 Juniper mortality-unknown agents)	Juniper	223 Discoloration (eastern cedar)	Eastern Red Cedar
38 Variable oak leaf caterpillar	Hardwoods	78 Gamble oak decline-unknown agents)	Gambel Oak	224 Discoloration (hardwood)	Hardwoods
41 Unidentified defoliator	All Tree Species	79 Limber pine decline-multiple agents)	Limber Pine	225 Discoloration (oak)	Oak
42 Heterodactylus annosus (Peziza annosa)	Softwoods	80 old pinon mortality	All Tree Species	226 Discoloration (lignicol)	Spruce
43 Pityopsis schweinitzi	Softwoods	81 dead fall tip	Unknown	230 Herbicide (eastern cedar)	Cottonwood/Poplar
44 Phomopsis	Softwoods	82 old pinon mortality	Common Pinyon	231 Herbicide (eastern cedar)	Eastern Red Cedar
45 Cytospora	All Tree Species	83 old pinon mortality	Lodgepole Pine	240 Flagging (hardwood)	Hardwoods
46 Western gall rust	Unknown	102 auto elm disease	Elm	250 Unidentified defoliator (cottonwood)	Cottonwood/Poplar
47 Comandra rust	Unknown	103 didyma blight	Ponderosa Pine	251 Unidentified defoliator (elm)	Elm
48 Stachytarax rust	Lodgepole Pine	104 loss needles	Spruce, White Spruce	252 Unidentified defoliator (hardwood)	Hardwoods
		105 drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	300 Mortality (pine)	Pine

USGS 100K Quad - Location Map



How Aerial Surveys Are Conducted

Data represented on this map are based on aerial observations manually recorded onto a map. This procedure is considered both an art form and a form of scientific data collection, and is highly subjective. An observer only has a few seconds to recognize the color difference between healthy and damaged trees of different species; diagnose causal agents correctly; estimate intensity; delineate the extent of damage; and precisely record this information on a georeferenced map. Air turbulence, cloud shadows, distance from aircraft, haze, smoke, and observer experience can all affect the quality of the survey. These data summaries provide an estimate of conditions on the ground and may differ from estimates derived by other methods.

Aerial surveys provide information on the current status for many causal agents, and are important when examining insect activity trends by comparing historical and current survey data over large areas.

Overview surveys are a 'snap shot' in time and therefore may not be timed to accurately capture the true extent or severity of a particular disturbance activity. Aerial surveys can be thought of as the first stage in a multi-stage sampling design. Other remote sensing approaches, including aerial photography, electro-optical sensors, and specially designed aerial surveys with modified flight patterns, can be used to more accurately delineate the extent and severity of a particular disturbance agent. The preceding methods are often more costly than overview surveys, and are generally reserved to address situations of sufficient environmental, economic, or political importance.

Area surveyed by William Ciesla & Ingrid Aguayo

8/22 - 8/29 2006

Map Created: 12/2006

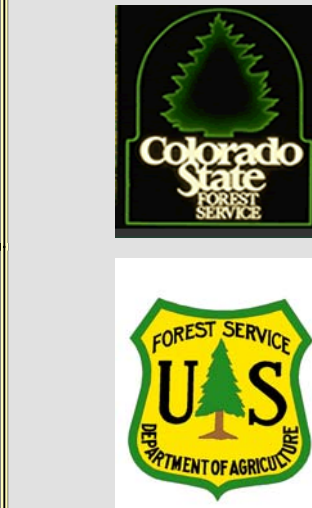
Projection: UTM NAD83 Zone 13

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*****DISCLAIMER*****
Due to the nature of aerial surveys, the data on this map will only provide rough estimates of location, intensity and the resulting trend information for agents detectable from the air. Many of the most destructive diseases are not represented on this map because these agents are not detectable from aerial surveys. The data presented on this map should only be used as a partial indicator of insect and disease activity, and should be validated on the ground for actual location and causal agent. Shaded areas show locations where tree mortality or defoliation were apparent from the air. Intensity of damage is variable and not all trees in shaded areas are dead or defoliated.

The insect and disease data represented on this map are available digitally from the USDA Forest Service, Region Two Forest Health Management group. The cooperators reserve the right to correct, update, modify or replace GIS products. Using this map for purposes other than those for which it was intended may yield inaccurate or misleading results.
A data dictionary and digital copies of this map and the insect and disease data are available at: <http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/>